

SINGLE CHANNEL IL766 DUAL CHANNEL ILD766 BIDIRECTIONAL INPUT DARLINGTON OPTOCOUPLEDERS

FEATURES

- Internal R_{BE} for Better Stability
- High Current Transfer Ratios, $V_{CE}=5\text{ V}$
IL/ILD766-1: 500% at $I_F=2\text{ mA}$
IL/ILD766-2: 500% at $I_F=1.0\text{ mA}$
- $BV_{CEO} > 60\text{ V}$
- AC or Polarity Insensitive Inputs
- Built-In Reverse Polarity Input Protection
- Industry Standard DIP Package
- Underwriters Lab File #E52744

DESCRIPTION

The IL/ILD766 are bidirectional input optically coupled isolators. They consist of two Gallium Arsenide infrared emitting diodes coupled to a silicon NPN photodarlington per channel.

The IL766 are single channel optocouplers. The ILD766 has two isolated channels in a single DIP package. They are designed for applications requiring detection or monitoring of AC signals.

Maximum Ratings

Emitter (Each Channel)

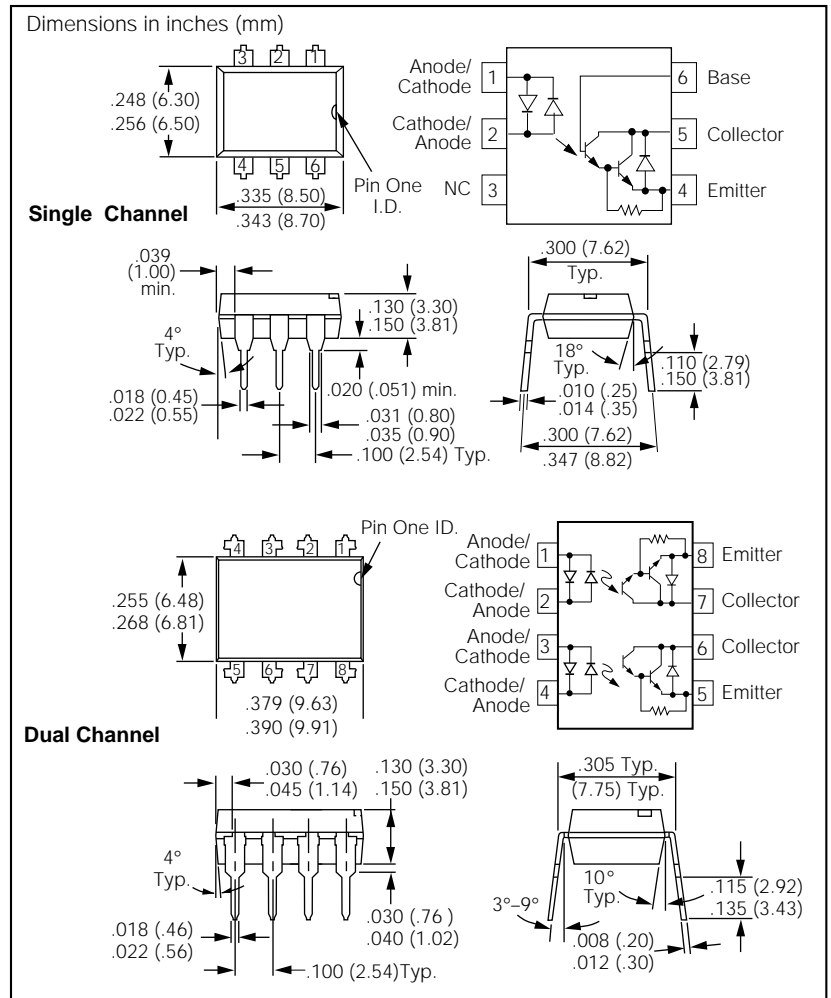
Continuous Forward Current	60 mA
Power Dissipation at 25°C	
Single Channel	200 mW
Dual Channel	90 mW
Derate Linearly from 25°C	
Single Channel	2.6 mW/°C
Dual Channel	1.2 mW/°C

Detector (Each Channel)

Collector-Emitter Breakdown Voltage	60 V
Collector-Base Breakdown Voltage	70 V
Power Dissipation at 25°C	100 mW
Derate Linearly from 25°C	1.33 mW/°C

Package

Isolation Test Voltage ($t = 1\text{ sec.}$)	7500 VAC _{PK} /5300 VAC _{RMS}
Isolation Resistance	
$T_A=25^\circ\text{C}$	$\geq 10^{12}\ \Omega$
$T_A=100^\circ\text{C}$	$\geq 10^{11}\ \Omega$
Total Power Dissipation at 25°C Ambient (LED Plus Detector)	
Single Channel	250 mW
Dual Channel	400 mW
Derate Linearly from 25°C	
Single Channel	3.3 mW/°C
Dual Channel	5.3 mW/°C
Creepage	7 mm min.
Clearance	7 mm min.
Comparative Tracking Index per DIN IEC 112/VDE303, part 1	175
Storage Temperature	-55°C to +150°C
Operating Temperature	-55°C to +100°C
Lead Soldering Time at 260°C	10 sec.



Electrical Characteristics ($T_A=25^\circ\text{C}$)

	Sym	Min	Typ	Max.	Unit	Condition
Emitter						
Forward Voltage	V_F		1.2	1.5	V	$I_F=\pm 10\text{ mA}$
Detector						
Breakdown Voltage, Collector-Emitter	BV_{CEO}	60	75		V	$I_C=1\text{ mA}$
Collector-Base	BV_{CBO}	60	90		V	$I_C=10\ \mu\text{A}$
Leakage Current, Collector-Emitter	I_{CEO}		10	100	nA	$V_{CE}=10\text{ V}$
Package						
Saturation Voltage, Collector-Emitter	V_{CEsat}			1.0	V	$I_F=\pm 10\text{ mA}$, $I_C=10\text{ mA}$
DC Current Transfer Ratio	CTR				%	$I_F=\pm 2\text{ mA}$, $V_{CE}=5\text{ V}$
IL766/ILD766-1		500			%	$I_F=\pm 1.0\text{ mA}$, $V_{CE}=5\text{ V}$
IL766-2		500			%	
Rise Time, Fall Time			100		μs	$V_{CC}=10\text{ V}$, $I_F=\pm 2\text{ mA}$, $R_L=100\ \Omega$

Figure 1. Input characteristics

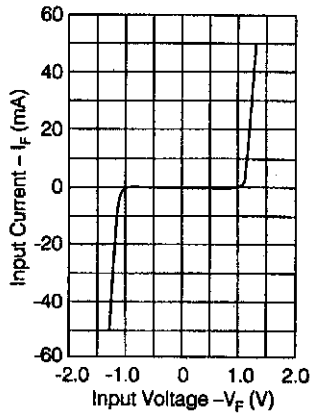


Figure 2. Transistor current versus voltage

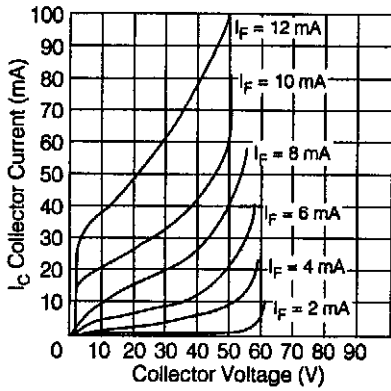


Figure 3. Transistor output current versus voltage

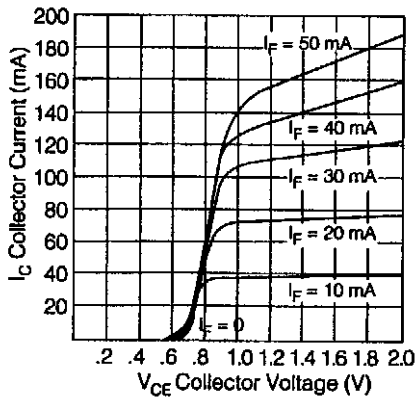


Figure 4. I_CEO at V_CE=10 V versus temperature

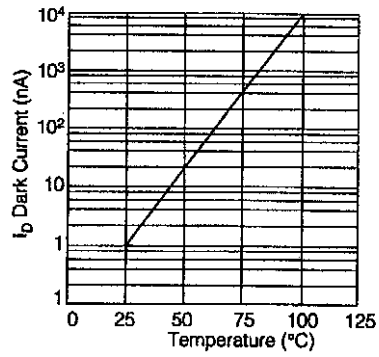


Figure 5. Tr versus forward current

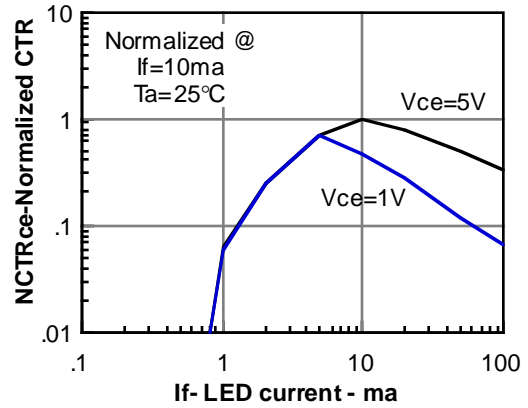


Figure 6. Normalized CTR versus forward current

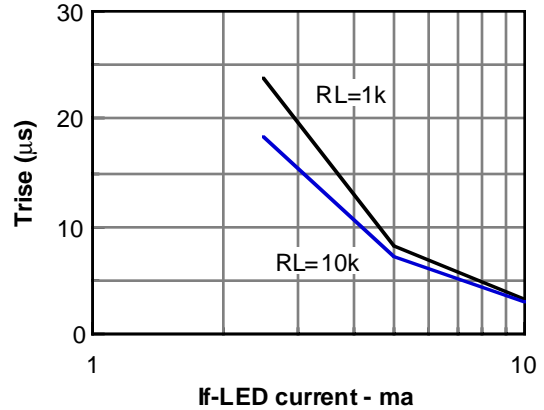


Figure 7. Saturated switching characteristics measurements—schematic and waveform

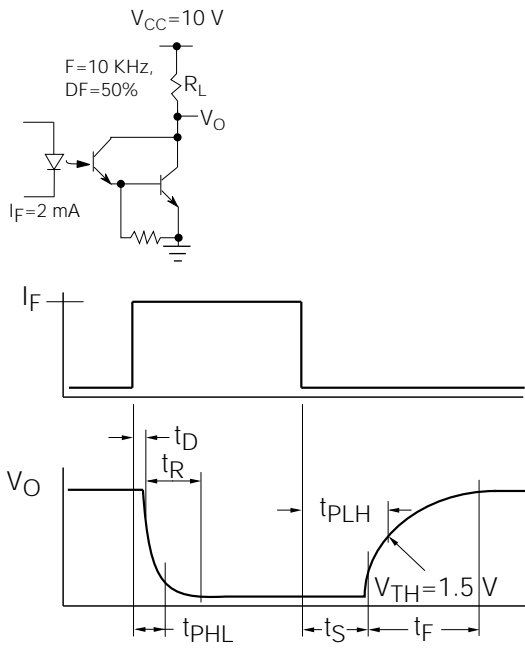


Figure 8. Tfall versus forward current

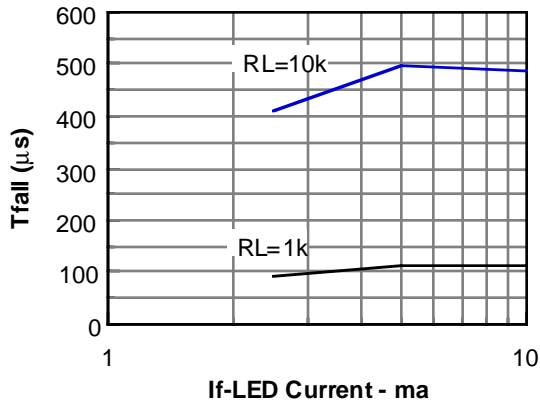


Figure 9. Ton versus forward current

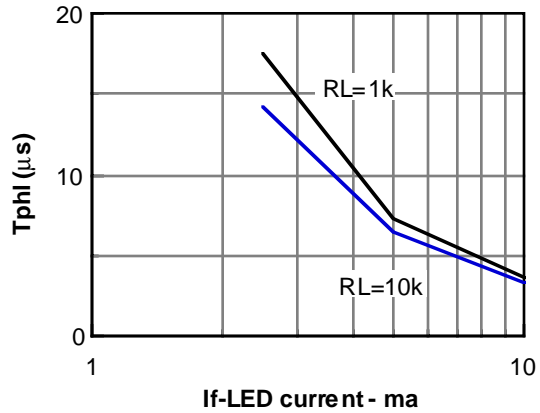


Figure 10. Toff versus forward current

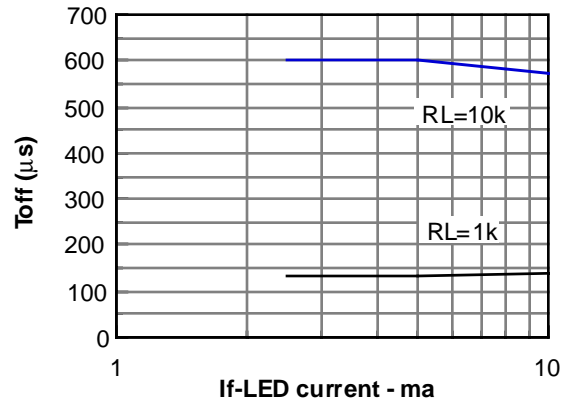


Figure 11. Tphl versus forward current

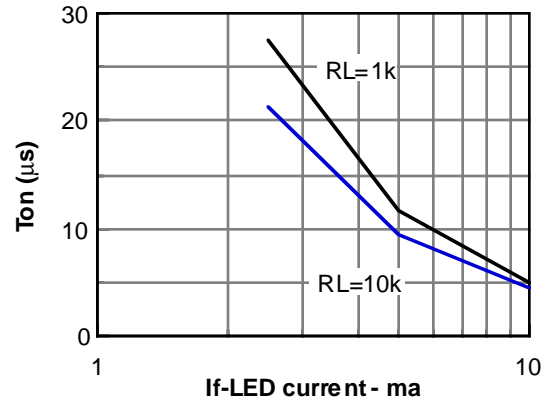


Figure 12. Tplh versus forward current

